

# Unconventional Energy in Utah

## *A Path Towards Energy Independence*

### QUICK FACTS

- Utah is home to world-class unconventional energy resources
- **Unconventional resources can make Utah Energy Independent**
- Shale-Oil reserves in Utah, Wyoming and Colorado are estimated to be more than the proven 'conventional' oil reserves in the Middle East
- Utah has the largest number of oil-sand deposits in the United States
- **Utah is poised to be a technology showcase** in unconventional energy

### Estimated Oil Reserves: Utah Shale vs. National

United States: 21 Billion Barrels Conventional

Utah: 77 Billion Barrels Shale Oil Reserves

0 20 40 60 80 100

**"Oil Shale has the potential to be one of our nation's greatest untapped resources"**

**-Governor Herbert**

**"Newer, cleaner technologies have been developed to produce liquid transportation fuels from... unconventional resources"**

**-Governor Herbert**

## **Resource Brief: Oil Shale**

### **What is Oil Shale?**

Oil-Shale is a mineral that contains organic material that -once processed- will produce oil similar to what comes up from traditional oil-wells. This oil, just like 'conventional' oil, is refined into the gasoline and diesel that fuels our cars and trucks.

### **Why would we develop it?**

Utah -while being a major oil producer- still imports the majority of the oil used in our refineries. Oil Shale represents a path towards energy independence and unlocking responsible development could create jobs, increase our energy security and strengthen our economy.

### **Why now? Hasn't Oil-Shale been around forever?**

The benefits of developing Oil Shale have been known for decades and it has been 'just over the horizon' for just as long. However recent technological innovation -based right here in Utah- has given promise to economic and responsible development of this important resource. Promising new technology, stubbornly high energy prices and Governor Herbert's renewed emphasis on energy security and independence suggests Utah strongly re-examine its Oil Shale resources.



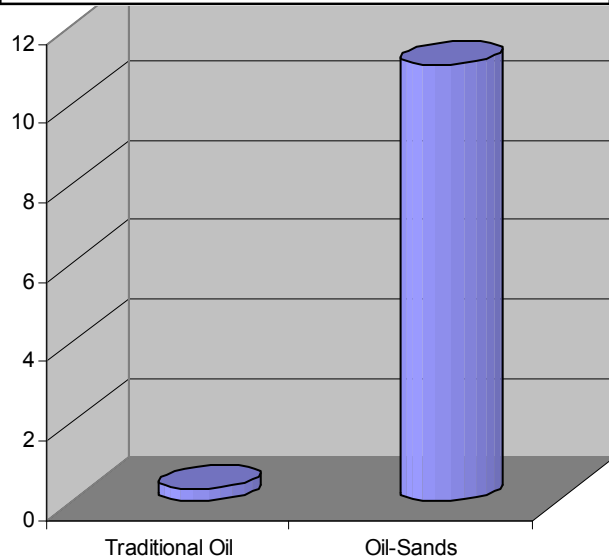
*Photo: UGS*

## **Oil-Sands:**

- Oil-Sands are a sticky mixture of sand and Bitumen; a geologic precursor to traditional oil
- Oil-Sands can be mined and upgraded into true 'oil'
- Uinta Basin contains 11 billion barrels in oil sands oil reserves, the most in the United States
- Oil Sands can be used for transportation fuels (gasoline/diesel) or natural asphalt

## **Utah Estimated Oil Reserves**

(Billions of Barrels)



## **Nuclear**

- Uranium has been mined for over 100 years in Utah
- Uranium mining ceased in the 1990's but was re-started in 2006 by mine operator Reliance Resources, LLC
- Denison Minerals' White Mesa Uranium Mill in San Juan County produced 1.2 million pounds of Uranium yellowcake in 2010 (23% of US national production)
- Westinghouse –a major manufacturer for the nuclear industry– produces zirconium products for commercial nuclear applications in Ogden

## **Carbon Sequestration**

- Utah is hosting a \$90MM, major commercial-scale carbon sequestration project in Carbon County
- Project will be the longest evaluation of large-scale CO2 injection
- Located 15 miles west of Price underneath a producing natural gas field
- Field Deployment operations kicked-off on August 12th, 2011
- Project will inject up 1 million tons of CO2 per year for 3-4 years into an underground geologic formation
- Will serve as a "Proof-of-concept" for future projects in Utah and beyond